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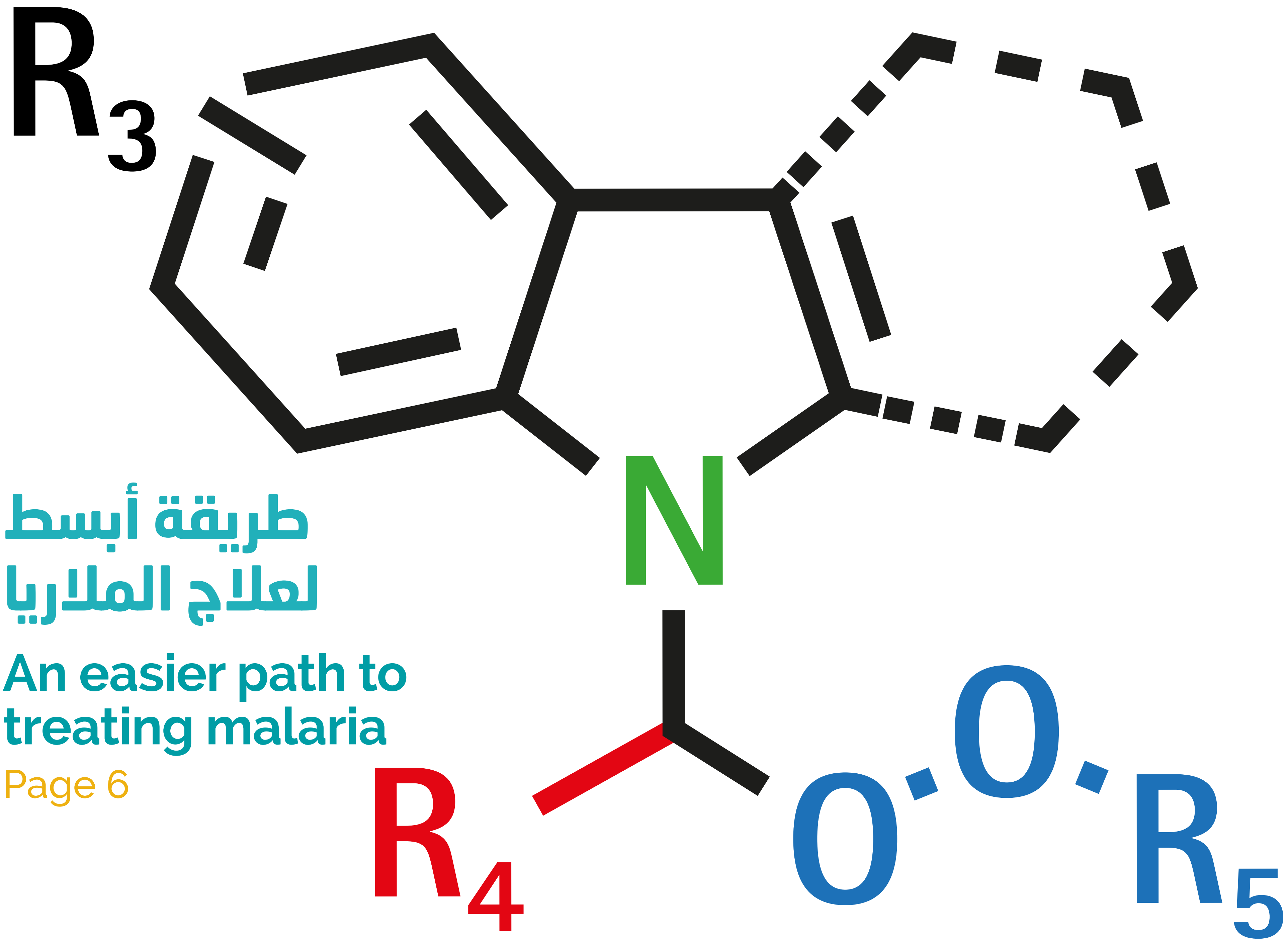

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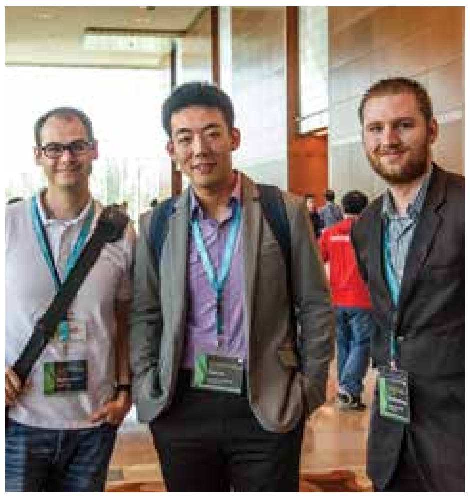

In brief

Keynote speakers and delegates from academia, governmental laboratories and industry attended the 2016 **Future Fuels Workshop** organized by the University's Clean Combustion Research Center (CCRC) from **March 7 to 9**. The workshop encompassed a wide spectrum of cutting-edge technologies relevant to fuel production, utilization and global sustainability, with an emphasis on low-grade and alternative fuels for transportation and stationary power sectors.

KAUST and the **U.S. National Science Foundation** (NSF) held a jointly organized conference from **March 14 to 16**. The event assembled leading subject matter authorities on electronic materials, devices and systems for a sustainable future. The event was organized by Muhammad Mustafa Hussain, KAUST associate professor of electrical engineering, with financial support from the KAUST Office of Sponsored Research, and was co-sponsored by NSF, the KAUST Industry Collaboration Program and the Computer, Electrical and Mathematical Science and Engineering (CEMSE) Division. Speakers included Walter Riess, science and technology department manager, IBM Zurich, and Stanford Professor Emeritus Thomas Kailath.

The Industry Engagement Office, in collaboration with Graduate Affairs and Saudi Initiatives, hosted its **seventh annual KICP career day on March 17**. Representatives from corporations such as SABIC, Saudi Aramco, Siemens and Total were on hand to talk about their business ventures, technologies and career opportunities.

A **Sci-Café** event on water desalination and reuse was held on **March 23.** KAUST speakers included TorOve Leiknes, professor of environmental science and engineering and director of the

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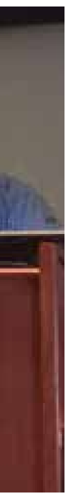

Water Desalination and Reuse Center; Noreddine Ghaffour, research professor; and Peiying Hong, assistant professor of environmental science and engineering. Search **#SciCafeKAUST** on Twitter to see what happened.

The KAUST **Athenaeum on Multiscale Imaging of Large Rock Volumes** was held from April 4 to 6. The Upstream Petroleum Engineering Research Center (UPERC) and the Energy Geosystems Group (EGG) brought together a select group of leading academic and industry researchers to develop a cross-disciplinary lexicon of geology, geophysics, petrophysics, reservoir engineering and drilling terms. Visit **https://uperc.kaust.edu.sa/event2016/Pages/About.aspx** to learn more.

The 2016 Spring Enrichment Program will take place from **April 22 to 30.** This year's theme is "Exploring Innovation." Stay tuned to **http://thelens.edu.sa** for complete event information.

World IP Day will be observed as part of the Spring Enrichment Program. The global observance of **#WorldIPDay** is set to happen on **April 26,** according to the World Intellectual Property Organization. KAUST will host events on April 25 through 27 to help raise awareness of the importance of intellectual property rights as the cornerstone of innovation. Visit **http://www.wipo.int/ip-outreach/en/ipday/** for more information.

The **Seventh Annual Talent Show** will be held on **Thursday, April 28** in the Auditorium (bldg. 20) from 7:00 to 9:15 p.m. **Preliminary auditions** for the Talent Show will be held in the Al-Khawarizimi (bldg. 1) multipurpose room on Sunday, **April 10 from 5:30 to 8:30 p.m.** An online registration form will be available from Sunday, March 13 onward on the Arts Office website - **https://artsoffice.kaust.edu.sa/Pages/Home.aspx.**

KAUST community members are invited to submit original works of art for display in the University Library as part of the **Artists of KAUST 2016 Exhibit.** The exhibition will open with a reception on **Wednesday, April 20** and will run until **Tuesday, May 3.** Creators of paintings, photography, textiles, jewelry, sculpture and ceramics are all welcome to apply. The event is sponsored by the Office of the Arts, in collaboration with the University Library.

On **Tuesday, May 5**, KAUST will recognize the 250 staff, faculty, teachers and researchers who have reached the **five-year service milestone** and have provided the University with their loyalty and dedication. An event to celebrate their achievements will begin at 10:45 a.m. in the **Auditorium (bldg. 20).** Stay tuned to **http://thelens.edu.sa** for complete information.

Faculty and research scientists are invited to participate in the **2016 Saudi Research Science Institute** (SRSI), a summer research internship program for academically talented high school students. SRSI 2016 will run from **July 16 to August 27.** Prospective mentors must offer suitable five-week projects in the science, technology, engineering and math (STEM) fields that give the students a chance to experience research at KAUST. For more information, contact **srsi@kaust.edu.sa.**●

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Accolades

1. Jasmeen Merzaban, KAUST assistant professor of bioscience, received a L'Oréal-UNESCO For Women in Science International Rising Talents award in Paris on March 24. File photo.

2. Muhammad Mustafa Hussain, KAUST associate professor of electrical engineering, received a fellowship from the Institute of Physics in February 2016. File photo.

3. Dalal Alezi, a fourth-year Ph.D. student in the University's Physical Science and Engineering (PSE) Division, received the inaugural PSE Division Student Award featuring outstanding Ph.D. candidates. File photo.

Merzaban receives L'Oréal-UNESCO For Women in Science International Rising Talents award

Jasmeen Merzaban, KAUST assistant professor of bioscience, received a L'Oréal-UNESCO For Women in Science International Rising Talents award at a ceremony on March 24 in Paris, France for her research contributions to stem cell migration and the glycosciences.

Each year, 15 young female scientists from around the world are presented with the International Rising Talents award to honor their roles in advancing scientific research and to encourage them in their promising careers. This year's winners were selected by a panel of judges from more than 2,000 nominees from 135 countries.

The award's objective is to offer recipients the recognition and support they will need to propel their careers forward and improve their visibility. For Merzaban, who joined KAUST in 2009 as a founding faculty member after completing postdoctoral studies at Harvard University, the award highlights the importance of her research on a global scale.

"I am truly honored to have been selected for the award this year," said Merzaban. "The award highlights the indispensable role of women scientists and recognizes their ongoing contributions to some of the most important research in human advancement, and will hopefully encourage more young women to be drawn to this enriching field.

"Scientific research is a positive force; it connects humanity toward common goals and brings down boundaries that otherwise divide us. At KAUST, I've had the incredible privilege to be part of an institution whose goals in advancing science are ambitions and which offers a supportive environment for us to thrive."●

Muhammad Mustafa Hussain receives Institute of Physics fellowship

KAUST Associate Professor of Electrical Engineering Muhammad Mustafa Hussain was awarded a fellowship from the Institute of Physics (IOP) in February 2016. IOP is based in London, U.K., and is a leading scientific society with more than 50,000 members worldwide. It works to promote and advance education and research in physics and to lead in the application of this research. IOP also produces prestigious physics publications and resources.

Hussain studied at The University of Texas at Austin (U.S.) from 2003-2005, completing both his master's degree and Ph.D. in solids state electronics within the area of electrical and computer engineering there. Upon joining KAUST in 2009, he founded the University's Integrated Nanotechnology Laboratory. He has 15 issued or pending patents, has won 18 research awards and both Intel and Samsung have adapted his work on CMOS technology.

"The fellowship is an international recognition that indicates a very high level of achievement in physics and an outstanding contribution to research in this field. The Fellow Election Committee was impressed by my significant contribution to the expansion of CMOS electronics and technology in the traditional and emerging application areas of electronics through original research," Hussain said.●

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Dalal Alezi wins PSE Student Award

Dalal Alezi, a Ph.D. student in the University's Physical Science and Engineering (PSE) Division, is the inaugural recipient of the PSE Division Student Award featuring outstanding Ph.D. candidates. Alezi is supervised by Mohamed Eddaoudi, associate director of the University's Advanced Membranes and Porous Materials Research Center and professor of chemical science.

Alezi has recently published two lead author papers in the Journal of the American Chemical Society, and she presented her research work at the 251st American Chemical Society National Meeting & Exposition in San Diego, California (U.S.) on March 13 to 17 this year.

"Dalal is an exemplary Ph.D. student who takes the necessary time to comprehend her research projects and critically plan the next set of experiments. She is a critical thinker who sets high standards and she is firmly committed to excellence in research," noted Eddaoudi.

Alezi received her bachelor's and master's degrees in chemical science from King Abdulaziz University in Jeddah. After hearing about KAUST during the University's inauguration in 2009, it became Alezi's dream to attend the University as a Ph.D. student. She interviewed with Eddaoudi and, after applying and writing a research plan, was accepted to KAUST.

"I have learned so much here at KAUST," said Alezi. "In my opinion, KAUST is not just about earning a Ph.D.—your experience here shapes your character. I have gained so much insight into how to look at things—how to address and then solve problems differently. I can see my progress from when I first started here three years ago. I feel my time at KAUST has made a huge difference to me."●

Let's get social:

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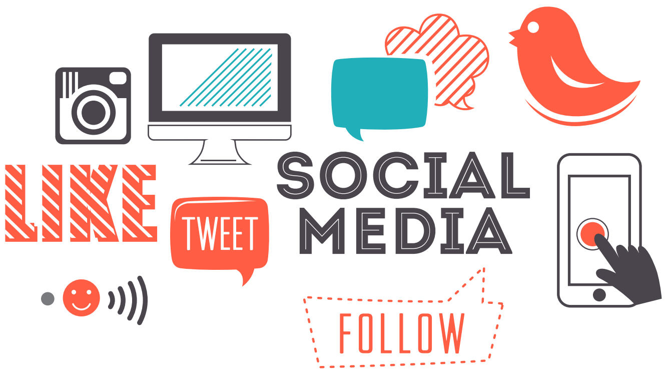


Here are a few **twitter accounts** that will keep you informed about global health:

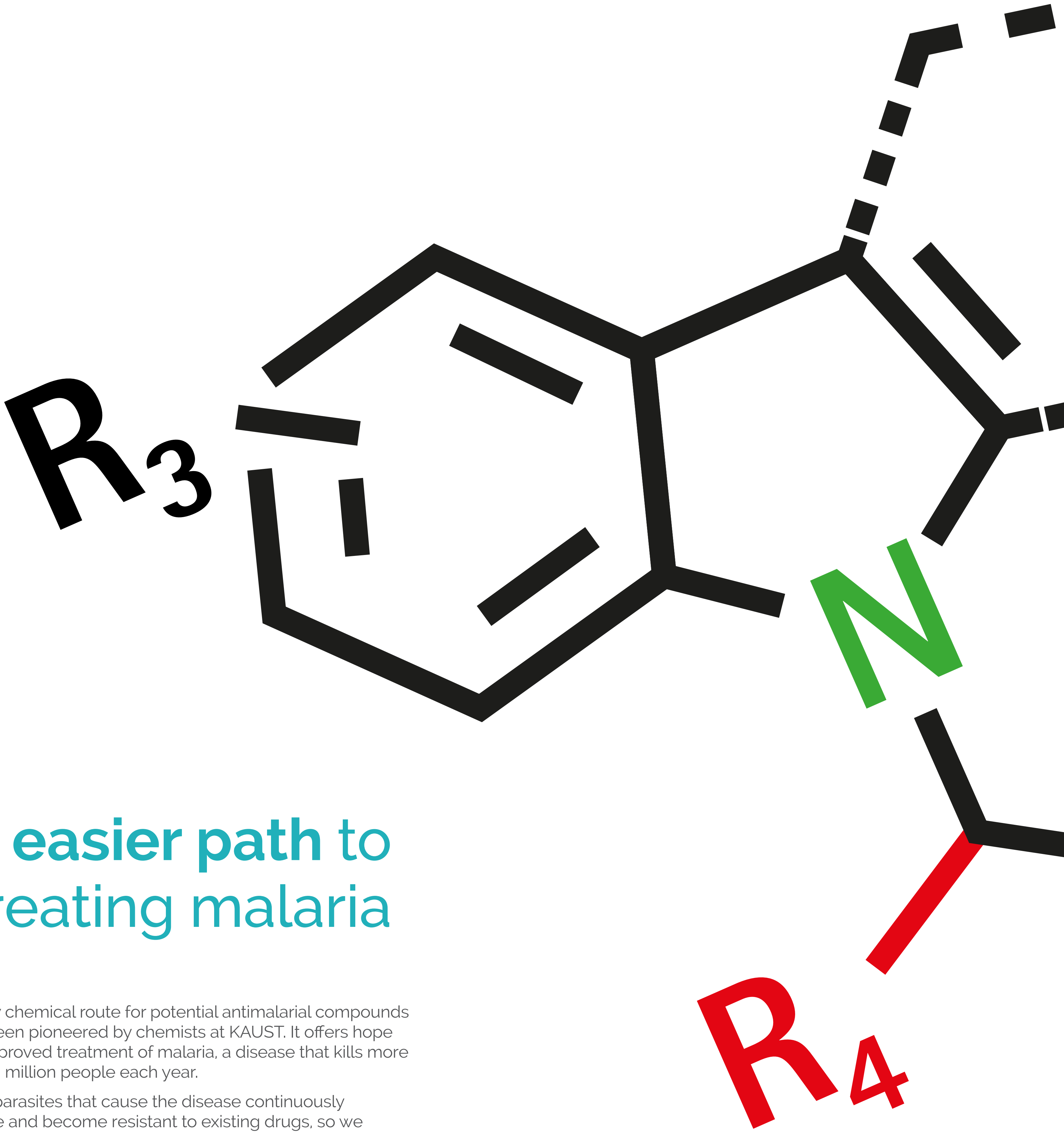
@WHO - The Geneva-based official Twitter account of the World Health Organization (WHO), the United Nations' health agency.

@WellcomeTrust - The London-based twitter account of the global charitable foundation dedicated to improving health by supporting bright minds in science, the humanities and the social sciences.

@MalariaNoMore - A singularly focused twitter account of the global organization aimed at ending worldwide malaria deaths full stop.

@CDC_Global - The U.S. government agency focused on saving lives, reducing disease and improving global health around the world.

@GatesFoundation - The Seattle, Washington-based foundation known for helping people lead healthy and productive lives.



An **easier path** to treating malaria

A new chemical route for potential antimalarial compounds has been pioneered by chemists at KAUST. It offers hope for improved treatment of malaria, a disease that kills more than a million people each year.

"The parasites that cause the disease continuously evolve and become resistant to existing drugs, so we need to constantly design and synthesize new drugs to treat malaria," noted Xinbo Wang, a chemist in Associate Professor Zhiping Lai's group in the KAUST Physical Science and Engineering Division. The work could also lead to the development of new drugs against bacterial infections, cancer and other diseases.

A chemical structure called the alpha-amino peroxide group, which is found in existing anti-malarial compounds, is a good basis for building potential new drugs. However, there are significant problems with existing methods for making such compounds because they require difficult chemical conditions.

Lai and his colleagues devised a simple and efficient procedure and showed that the alpha-amino peroxide group can be combined with an "indole" chemical grouping to make the "N-(alpha-peroxy)-indole" structure.

"There are lots of reports on the synthesis of indole or peroxide-containing compounds, but there are no general methodologies for combining the two functional groups in one molecule that had been previously reported," stated Wang.

The KAUST team took things a step further by adding a carbazole group. The indole, carbazole and peroxide groups occur separately in many antimalarial, antibacterial and anti-tumor compounds.

"Merging these functional groups in one molecular structure may offer great potential for the discovery of new types of drugs," Wang said.

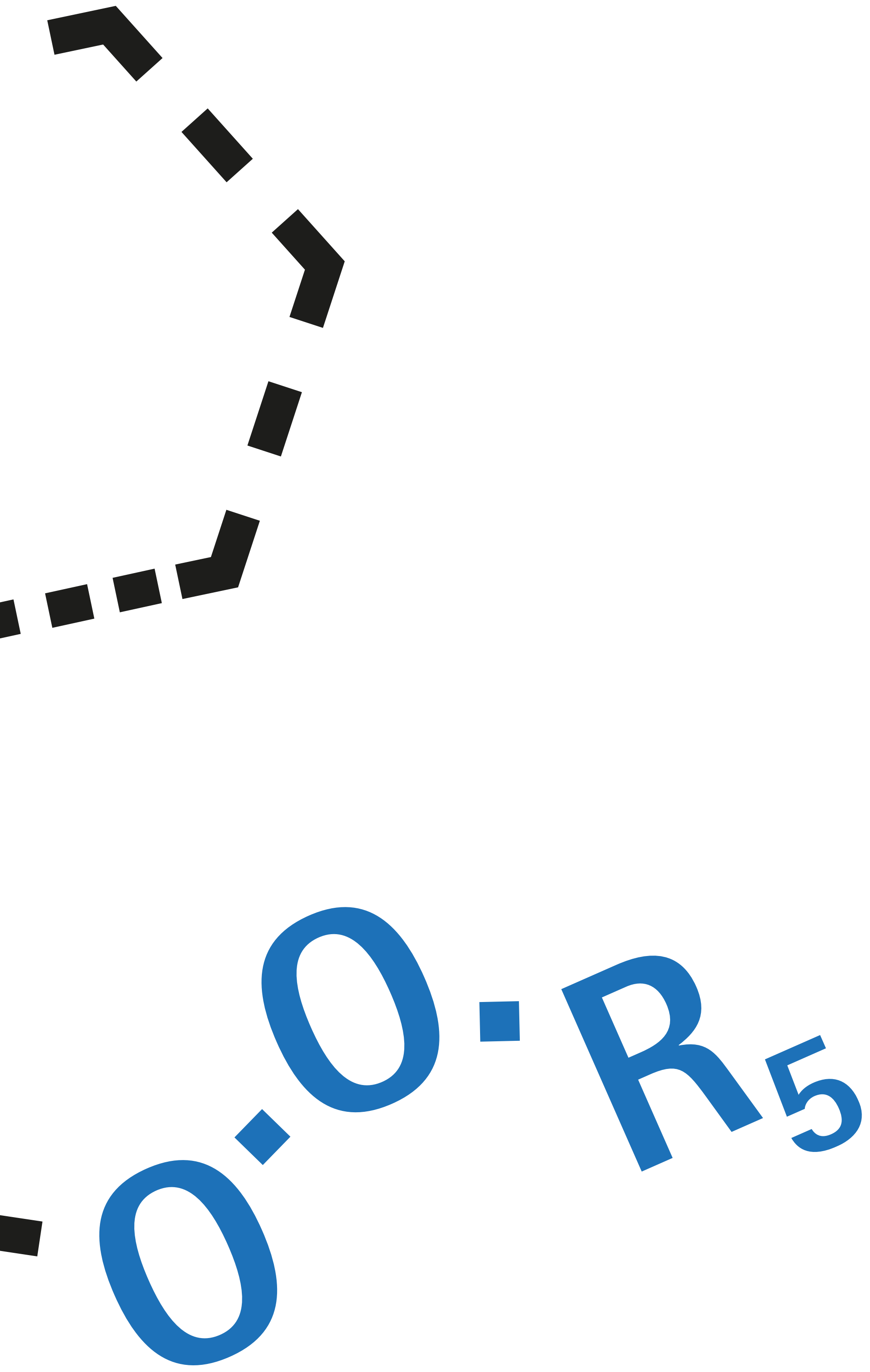
The reactions proceed in "one-pot, open atmosphere" conditions, meaning everything occurs in one vessel without complicated intermediate steps. The vessel is also open to the air rather than protected by unreactive gases, as is required for many similar chemical processes.

"Our procedure could be easily handled and scaled-up to allow the construction of a new library of molecules for drug screening," he noted.

Upscaling is the challenge that the KAUST researchers plan to turn to next to make a wide variety of compounds that can be tested for useful biological activity against a variety of diseases, and especially against malaria.

In developing their new chemical procedures, the researchers drew inspiration from a chemical reaction used by another research project at KAUST.

"Our story proves the importance of a multidisciplinary research environment, which we consider is the treasure of KAUST," Lai said. "Here, experts from different fields work closely together."●



Graphic: The crucial chemical structure at the heart of the potential new drugs to fight malaria.

1. Zhiping Lai, KAUST associate professor of chemical and biological engineering, and colleagues worked on developing a new chemical route to produce potential antimalarial compounds. File photo.

1

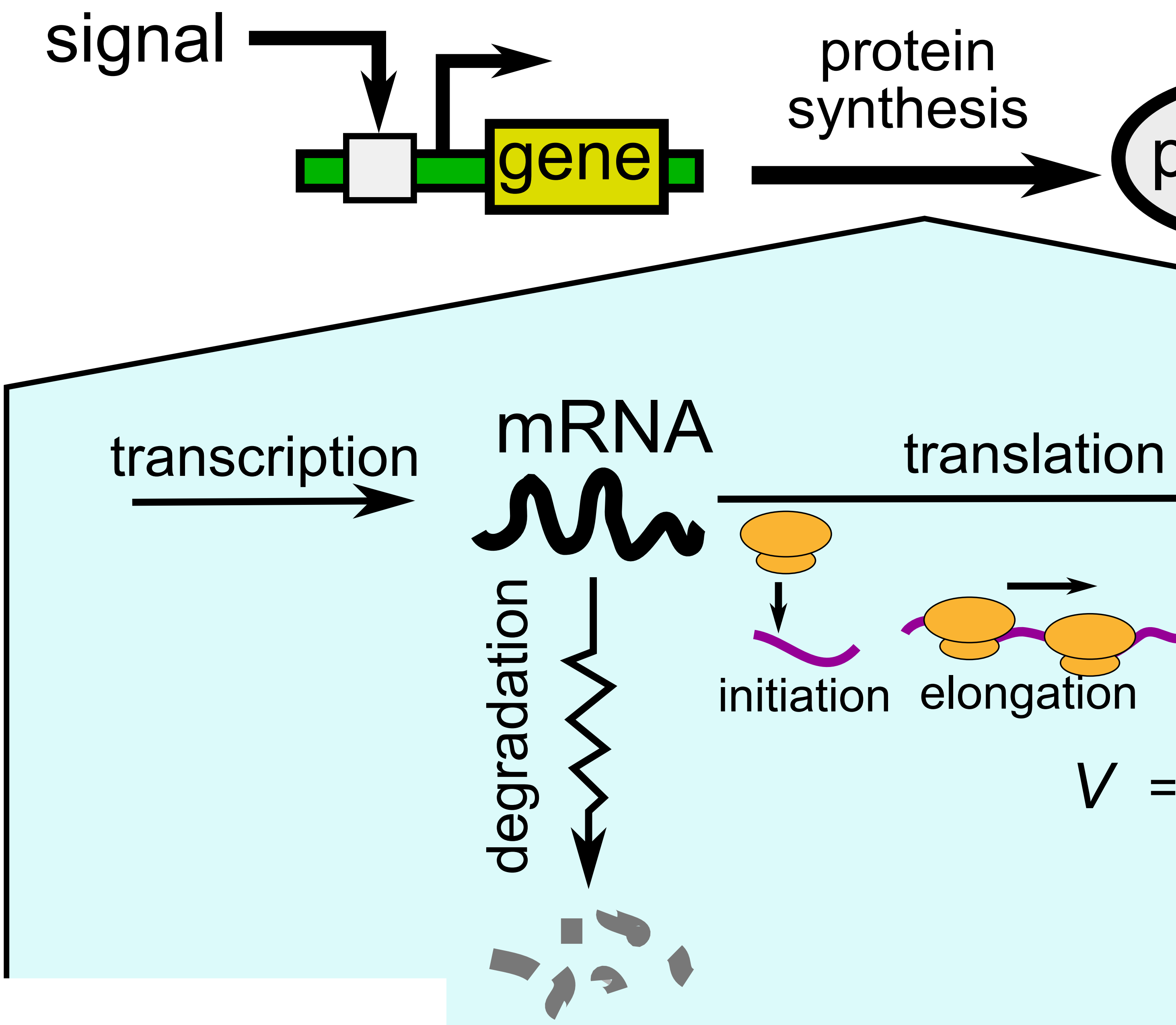
طريقة أبسط
لعلاج الملاريا

يعمل علماء الكيمياء في جامعة الملك عبدالله للعلوم والتقنية على طريقة كيميائية مبتكرة لتصنيع عقاقير طبية تهدف لتحسين العلاج من مرض الملاريا الذي يقتل أكثر من مليون شخص سنوياً. كما يمكن أن يؤدي هذا العمل البحثي إلى تطوير أدوية جديدة لمكافحة العدوى البكتيرية ومرض السرطان وأمراض أخرى. يقول عالم الكيمياء زيبنو وانغ، من فريق البروفيسور زيبينغ لاي الأستاذ المشارك في قسم العلوم والهندسة الفيزيائية: " تتطور الطفيليات التي تسبب مرض الملاريا بصورة مستمرة وتصبح مقاومة للعقاقير الموجودة حالياً، ولذلك نحتاج إلى مواصلة البحث عن أدوية جديدة لعلاج هذا المرض".

تعتمد الطريقة التي ابتكرها الفريق على استخدام بنية كيميائية للبيروكسيد تسمى مجموعة (alpha-amino peroxide)، والموجودة في قائمة من المركبات المضادة للملاريا، حيث يتم استخدامها كأساس لبناء العقاقير الجديدة المحتملة. ومع ذلك، هناك مشاكل كبيرة في الطرق الحالية لصنع مثل هذه المركبات لأنها تتطلب ظروف كيميائية صعبة.

ابتكر البروفيسور لاي وزملاؤه طريقة بسيطة وفعالة أظهرت ان مجموعة البيروكسيد (alpha-amino peroxide) يمكنها أن تتفاعل مع مجموعة الإندول (مركب عضوي من المركبات العطرية الحلقية غير المتجانسة)، لينتج لنا مركب (N-(alpha-peroxy)-indole) وهي طريقة لم تتم تجربتها من قبل بحسب البروفيسور وانغ. ثم تتم إضافة مجموعة ثالثة للتفاعل وهي مجموعة الكاربازول carbazole وهو مركب عضوي شبيه بالإندول. والجدير بالذكر هنا أن هذه المجموعات الثلاثة في التفاعل (الإندول والكاربازول والبيوكسيد) تتواجد بصورة مستقلة في العديد من المركبات والعقاقير المضادة للملاريا، والمضاد للجراثيم، والمضادة للورم ولكن لم يسبق دمجها جميعاً في مجموعة واحدة. ويشرح البروفيسور وانغ ذلك بقوله: "دمج هذه المجموعات الوظيفية في بنية جزيئية واحدة يمكنها أن تقدم إمكانات كبيرة لاكتشاف أنواع جديدة من العقاقير الطبية". ويرى الفريق أن التحدي القادم لهم هو في زيادة كمية الإنتاج من المركبات الكيميائية الجديدة على نحو واسع بحيث يمكنهم تقديم مجموعة متنوعة من المركبات المفيدة ضد مجموعة متنوعة من الأمراض، وخصوصاً الملاريا.

استلهم الباحثون في هذا المشروع فكرة هذا التفاعل الكيميائي الجديد من تفاعل كيميائي آخر استخدم في مشروع بحثي آخر في جامعة الملك عبدالله للعلوم والتقنية الأمر الذي يثبت أهمية بيئة الأبحاث متعددة التخصصات التي تتميز فيها الجامعة، والتي وصفها البروفيسور زيبينغ لاي بأنها كنز جامعة الملك عبدالله لما تتميز به من عقول وخبرات فريدة من نوعها في مختلف المجالات. ●



Noisy cells **produce bursts of protein**

KAUST researchers have developed a new mathematical model that makes the complex process of synthesizing proteins from the genes that encode them more predictable.

The multi-step synthesis pathway, which is mediated by RNA molecules, can be affected by random events, creating bursts of protein production. The KAUST model captures the factors that make this "noise" in protein production and that may provide insights into how genes are controlled and how they evolved.

Protein synthesis consists of two main stages: "transcription" of the genetic code into messenger RNA (mRNA) molecules and "translation" of the mRNA into proteins.

Study lead author Xin Gao from the University's Computational Bioscience Research Center (CBRC) explained that this is a stochastic process that "leads to variability in the abundance of gene products (RNAs or proteins) in a single cell through time or among genetically identical cells," he said.

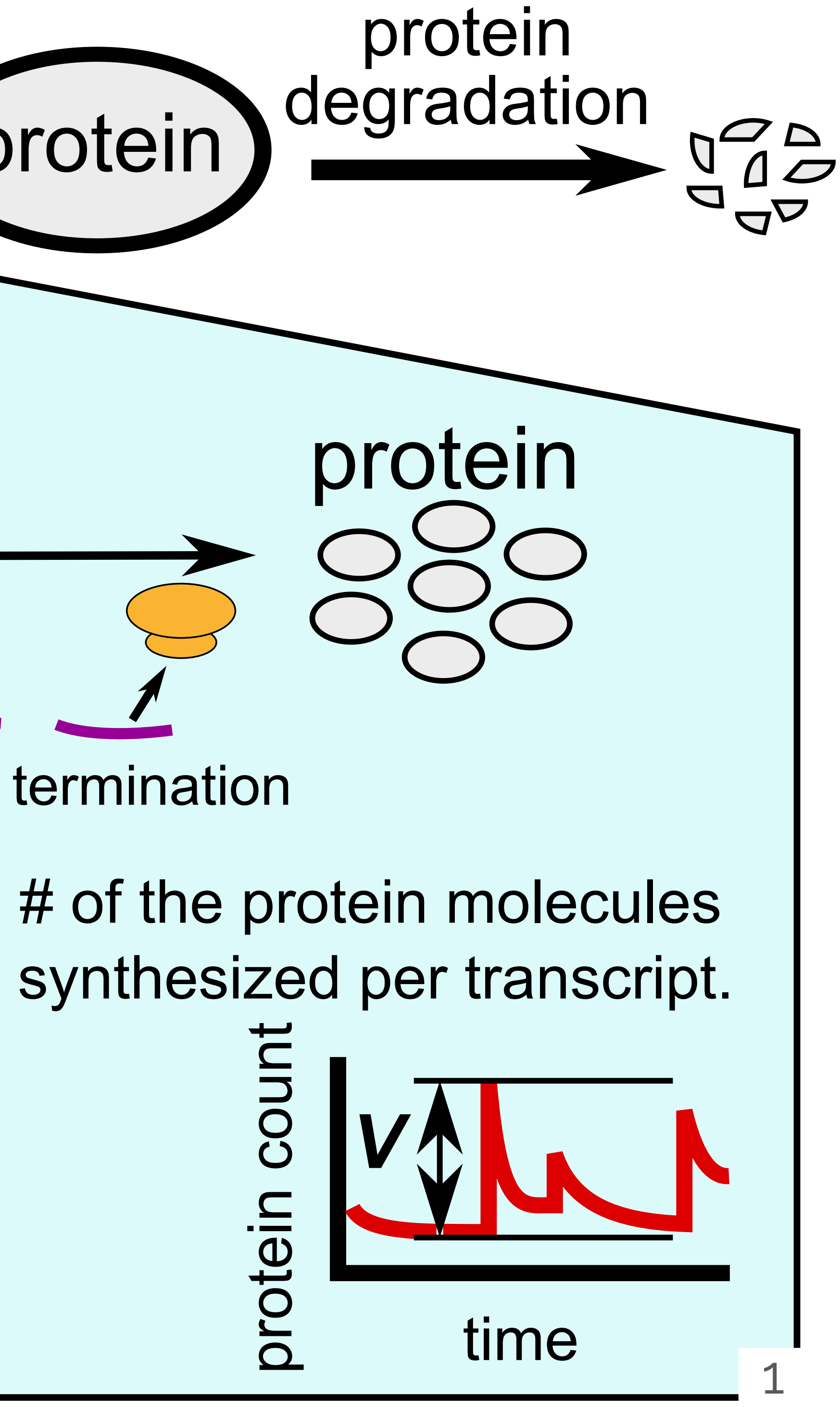
This variability can have far-reaching effects on the evolution and function of cells such as cancer cells and microbial pathogens—including their capacity for drug resistance.

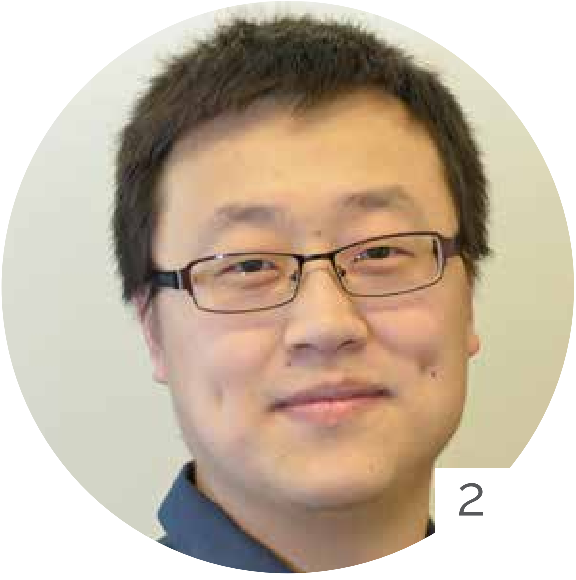
"Bursts" of translation are thought to be the main cause of variability, especially in simple organisms like bacteria, where there are often only small amounts of mRNA. However, translation itself comprises multiple steps, including initiation, elongation and termination.

Previous models treated initiation as the only rate-limiting step in protein production, but this may not always be realistic.

"Our study was inspired by recent research showing that translational efficiency can be strongly affected by the elongation steps under stress conditions, such as when drugs are applied to pathogens," noted Gao.

The KAUST team responded by developing the more sophisticated model that has the capacity to handle more general situations, including internal and external influences





on translation. The model allows them to explore the different mechanisms regulating protein production and showed that the distribution of the translational burst can have a strong impact on the features and fitness of a cell.

The team anticipates that their model might provide insights into cells' responses to stress, which rely on changes in protein abundance.

"We had planned to analyze the association between stress and gene expression noise using experimental data, but we found we needed the theoretical model that is more general than previous models," Gao said.

The research might also be applicable to more complex organisms. "Recent studies have shown that stress conditions can have strong effects on translation in yeast and plants, and so protein burst size distributions could have effects on their protein abundance levels," stated Gao.●

1. KAUST researchers model how gene expression "noise" affects protein production in bacterial cells. Reproduced with permission from The Royal Society of Chemistry.

2. Xin Gao, KAUST assistant professor of computer science, and colleagues developed a mathematical model to make the complicated process of synthesizing proteins from genes more predictable. File photo.

Catching a **glimpse of the double helix**

Although the structure of DNA was first unraveled more than 60 years ago, a direct image of DNA's detail has remained elusive. Researchers at KAUST have now developed a technique that allows them to visualize individual DNA molecules in real time.

DNA has always been a slippery customer because of the low-contrast elements of which it is made and the fragile structure of the helical molecule. Now, an international team has perfected a preparation technique that fixes the unstable structure and an imaging process that minimizes its degradation.

According to senior author Enzo Di Fabrizio from the Physical Science and Engineering Division at KAUST, this opens potential to investigate molecular phenomena from DNA modification by mutation to DNA-protein interactions.

"Single molecule interactions are crucial for the understanding of many fundamental biological mechanisms," he said.

The new process involves suspending single DNA molecules within a framework of minute silicon pillars. The DNA is then viewed with a high-resolution transmission electron microscope (HRTEM) that fires beams of electrons through it to produce a perfect image.

This method enabled the researchers to take key measurements of the DNA helix, including its diameter, the distance between the building blocks of the molecule (called "bases") and the depth of the so-called "grooves" of the helix that provide a measure of its shape. In other words, said Di Fabrizio, "how the molecule is coiled."

They could also determine the length of bonds between the two helices of DNA, which may indicate its level of methylation (a chemical effect that can alter gene activity) and pinpoint errors in base-pairing that may cause mutations and disease.

Di Fabrizio suggests that HRTEM images will be invaluable in figuring out exactly how DNA interacts with proteins in the cellular environment. He is focusing in particular on how repair proteins "dock" on to DNA to fix errors in the genetic code.

"Until now, this has not been seen at such a high resolution," he said. "In the future, this will help scientists understand in detail how DNA repair occurs under both normal and pathological conditions."

This is a rapidly developing field—already there are cameras that are 100 times more sensitive than the one used in this work.

The team intends to combine their approach with a freezing technique known as "cryoEM" to achieve even greater detail and to extend it to imaging the structure of cell membranes. ●

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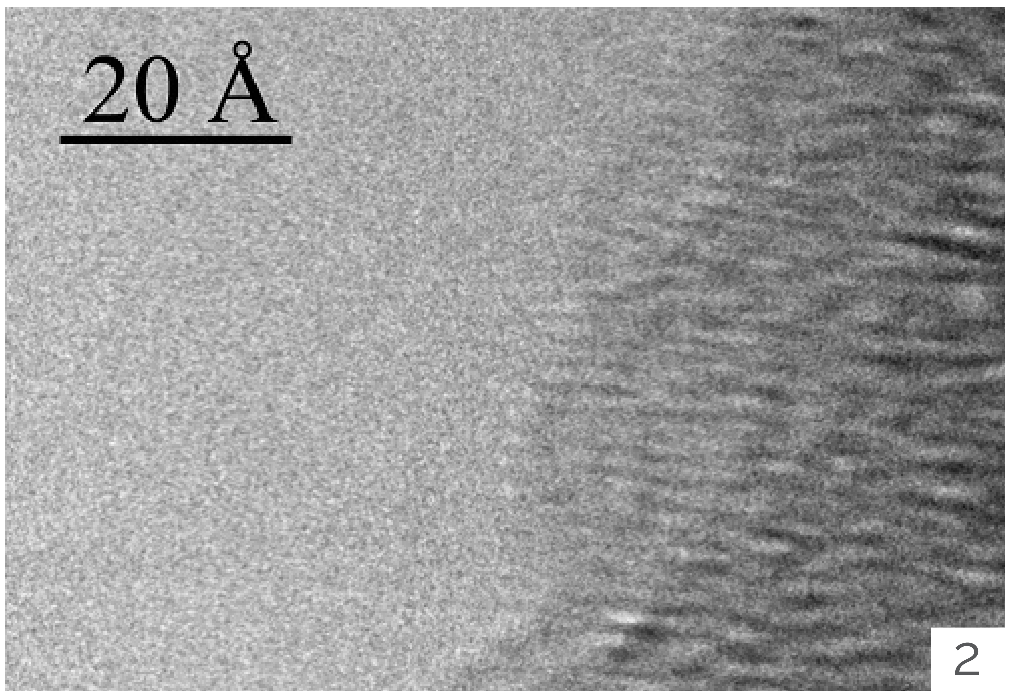
1. Enzo Di Fabrizio, KAUST professor of material science and engineering, developed a novel preparation technique with colleagues at the University to visualize individual DNA molecules in real time. File photo.

2. A HRTEM phase-contrast image of a single A-DNA helix bound to a 100 Å DNA bundle. Reproduced with permission from Science Advances; this work is licensed under CC BY-NC.



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University hosts 2016 KAUST Future Fuels Workshop

By David Murphy

The KAUST Future Fuels Workshop, held from March 7 to March 9 on the University's campus, brought some of the leading experts from academia, national laboratories and industry to KAUST to discuss the present state of affairs and future advancements in the field of combustible energy.

Throughout the three-day workshop, experts from across the globe and KAUST-based researchers discussed a wide spectrum of cutting-edge technologies relevant to fuel production, utilization and global sustainability, with an emphasis on low-grade and alternative fuels for transportation and stationary power sectors.

Various keynote addresses drew attention to the current state of and future developments in clean combustion research. One main objective of the workshop was to promote international collaborations in establishing research and development direction for diverse fuel formulation and utilization with the end goal of creating clean and efficient power generation systems.

The importance of alternative energy

During his keynote address, Ahmad Al Khowaiter, chief technology officer at Saudi Aramco, touched on the continuous importance of alternative and sustainable energy and the part KAUST plays in cutting-edge research in this area.

"Early on, we looked at how KAUST could contribute to the world," he stated. "Hydrocarbon fuels have been part of civilization and part of modern society and will be with us for a long time to come. The challenge is how to use them responsibly."

Al Khowaiter noted there are many challenges ahead and outlined how KAUST can play a part in addressing these challenges.

"The energy challenge is too great for any one player to have an impact—there must be collaboration between government, industry and academia. It is really a global challenge and should be seen as a KAUST-leading contribution," he said.

The future of fossil fuels

Amer Amer, fuel chief technologist of Saudi Aramco R&D, noted that the transition to solely renewable energy won't occur anytime soon in the future without a symbiotic reliance on traditional core fuels.

"Oil will be with us for quite some time," he said. "The best thing we can do is to improve the efficiency of current oil-based technologies."

Dr. Jeffery Goldmeer, manager of gas turbine combustion & fuel solutions from GE Power and Water, noted that global trends in the use of alternative fuels for power generation are shifting and that Saudi Arabia is leading the world in the use of crude oils for power generation.

Positive outcomes

Workshop guests gained unique insight into the future of fuel research, and the Future Fuels Workshop ensured that many new initiatives and worldwide collaborations will be taken on board stemming directly and indirectly from the Kingdom.

KAUST Clean Combustion Research Center (CCRC) Director and workshop co-chair William Roberts closed out the workshop, noting, "We've had a very nice three days. The program was very well done, and I would especially like to thank those of you who came a long distance to be here."●

1. Experts assembled on the KAUST campus March 7 to 9 for the Future Fuels Workshop. Photo by Tunde Gaspar.

2. Amer Amer from Saudi Aramco answers questions during his talk entitled "Unlocking the Potential of Fuel to Enable Sustainable Mobility" at the University's Future Fuels Workshop. Photo by Tunde Gaspar.

3. Suk Ho Chung, KAUST named professor of mechanical engineering, gives a talk on fuel effects on soot formation in diffusion flames at the Future Fuels Workshop. Photo by Tunde Gaspar.

4. KAUST Professor Robert Dibble (left) and Jeffrey Goldmeer from GE Power and Water discuss questions with the audience at the University's Future Fuels Workshop. Photo by Tunde Gaspar.

5. KAUST Professor Bengt Johansson speaks at the Future Fuels Workshop. Photo by Tunde Gaspar.

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KAUST hosts **Future Faculty Convention** for Saudi universities

Saudi Initiatives recently organized a special two-day gathering as part of its Future Faculty Program for Saudi Universities. The event welcomed delegations from approximately 20 Saudi public and private universities and over 160 guests to focus on efforts led by KAUST in supporting the development of strong future faculty members for national universities.

While many of the institutions and individuals who attended the event have relationships or collaborations with KAUST, it was the first time for peers and colleagues to gather in one place to discuss their impact in national higher education by cultivating the next generation of Saudi faculty and institutional leaders.

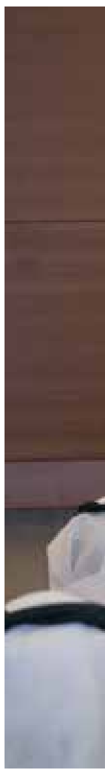
Guests included vice presidents, deans, department chairs, faculty members and prospective KAUST students who are currently on track to becoming faculty members. All had the opportunity to experience life at KAUST through lectures, academic and research showcases, facility tours and meetings with the University's senior and academic leadership.

KAUST President Jean-Lou Chameau emphasized the importance of the event for the University and the Kingdom, and greeted guests individually and in small groups during a special lunch. Chameau described the University's diverse community and the supportive academic ecosystem that drives the strategy at KAUST and shapes the University's national and international reputation for excellence.

Nadhmi Al-Nasr, KAUST executive vice president, welcomed guests on the first day and spoke to them about the University's beginnings and its 1,000-day journey from vision to reality.

There was a significant sense of accomplishment following the event, with broad agreement from all involved that the discussions and sharing of knowledge were invaluable for making progress, strengthening or beginning collaborations and supporting prospective students who wish to pursue advanced degrees to enhance their effectiveness as future faculty in Saudi Arabia.

The Future Faculty Program for Saudi Universities advances the KAUST mission to develop national talent and create future leaders in science and technology. The program supports the development of teaching assistants and lecturers from Saudi Arabian universities as they earn master's and Ph.D. degrees at KAUST before returning to their home universities as highly specialized faculty members.●



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1. Jean Frechet, KAUST vice president for research, speaks to guests at the University's Future Faculty Convention.

2. Najah Ashry, vice president, Saudi Initiatives, discusses how Saudi students can become successful with the audience at the Future Faculty Convention.

3. A diverse team from KAUST represented the University at the 251st American Chemical Society (ACS) National Meeting & Exposition. Photo by Meres J. Weche.

4. Jean-Luc Bredas (center), KAUST distinguished professor and director of the University's Solar and Photovoltaics Engineering Research Center (SPERC), received a 2016 American Chemical Society (ACS) Award in the Chemistry of Materials at the 251st ACS National Meeting & Exposition. Photo by Peter Cutts Photography.

Opportunities to Live, Work and Study at KAUST
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Telling the KAUST story

By Meres J. Weche

The Core Laboratories team, in collaboration with the University's Physical Science and Engineering (PSE) Division, Human Resources, Academic Affairs, Research Operations and Marketing and Communications (MarCom), recently represented KAUST at the 251st American Chemical Society (ACS) National Meeting & Exposition in San Diego, California. Held from March 13 to 17, the bi-annual event attracts over 11,000 chemists, chemical engineers, academicians, graduate and undergraduate students and industry professionals.

Representing a diverse group of staff, students and faculty, the KAUST team set up a booth in the recruiters' row along the Career Fair area. Featuring a large background image of the beautiful KAUST Harbor headed with an invitation to consider opportunities to live, work and study at KAUST, the booth welcomed a large number of visitors. From potential students, postdoctoral fellows and research scientists and more, the KAUST group fielded multiple questions, received many CVs and information cards and also set up several on-site interviews.

As part of the ACS Meeting's Career Fair, KAUST Bioscience Core Laboratory manager Dr. Stine Büechmann-Møeller gave a talk to potential candidates about the career benefits of joining KAUST and discussed her own professional journey.

"KAUST is a great place to work in a hybrid setting to sample both industry and academic worlds," she told them. Büechmann-Møeller also spoke about the personal enrichment aspects of embarking on an international career, especially in an emerging market region dedicated to diversifying the economy.

The ACS National Meetings also hold award ceremonies to recognize leading achievements in the field of chemistry. This year, Jean-Luc Bredas, KAUST distinguished professor and director of the University's Solar and Photovoltaics Engineering Research Center (SPERC), received a 2016 American Chemical Society (ACS) Award in the Chemistry of Materials. ●

International Conference brings insight into hydrophobic interfaces

By Caitlin Clark

The University's Water Desalination and Reuse Center (WDRC) hosted the KAUST International Conference on Physics and Chemistries at Hydrophobic Interfaces from February 14 to 17.

The event included presentations by 30 renowned experimentalists and theorists from around the world. Thirty graduate students and postdoctoral fellows also presented research posters and joined the discussions. Researchers from regional universities, such as KFUPM and KAU, along with WDRC's industrial partners Saudi Aramco, Schlumberger, the Saudi Basic Industries Corporation (SABIC) and Saudi Membrane Distillation Desalinationalso attended.

Participants shared insights on the physical, chemical and biological aspects of hydrophobic interactions, including short- and long-range forces, hydrogen bonding, ion adsorption at the air-water interface, the molecular structuring of water, ATP synthesis, density fluctuations at the surface of water, nanoscale bubbles, specific ion effects and rates of interfacial reactions.

"Hydrophobic interactions underlie numerous natural and industrial processes, including flow through aquaporins, the cleaning action of shampoos and detergents, oil recovery and water desalination," said Himanshu Mishra, KAUST assistant professor of environmental science and engineering and conference organizer.

"In fact, wherever you go on the planet and whatever scale you choose to look at, you find interfaces of water with hydrophobic medial; for example, tiny cloud droplets, the surface of the ocean and wax-coated leaves of plants. However, despite their importance on both the nano- and macro-scales, a comprehensive understanding of hydrophobic interactions remains elusive," he continued. "We organized the conference to identify key challenges in the field and to form new alliances—e.g. between experimentalists and theorists—to surmount them."

Mishra and Dr. Naval Subramanian, conference coordinator and a researcher in Mishra's group, thanked the KAUST Office of Sponsored Research and the KAUST Industry Collaboration Program (KICP) from the Industry Engagement Office for their support in organizing the conference.

"The four days of the conference provided invaluable insights into the diversity of new experimental and intellectual approaches, raised new questions and—most importantly—led to new long-term collaborations," Mishra said.●

1. KAUST President Jean-Lou Chameau speaks to guests at the International Conference on Physics and Chemistries at Hydrophobic Interfaces.

2. Himanshu Mishra, KAUST assistant professor of environmental science and engineering and organizer of the International Conference, greets attendees at the conference.

3. Communications Coordinator Laura Ochoa (right) from the University's Water Desalination and Reuse Center (WDRC) and team greet guests at the International Conference.

4. Visitors to the University's International Conference on Physics and Chemistries at Hydrophobic Interfaces view posters on display for the event.

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KICP Career Day welcomes company representatives to campus

By Caitlin Clark

The KAUST Industry Engagement Office, Graduate Affairs and Saudi Initiatives welcomed representatives from a variety of Saudi and international companies to the University's campus on March 16 and 17 for the Seventh Annual KAUST Industry Collaboration Program (KICP) Career Day.

Activities on March 16 featured company presentations, an employer discussion panel and a meet-and-greet networking opportunity for students and employers.

On March 17, students heard further company presentations; attended a KAUST alumni panel featuring alumni working in industry; and met with company representatives to discuss summer 2016 internship possibilities and full-time employment opportunities during an afternoon career fair. Companies on-hand to talk to students included Saudi Aramco, the Saudi Basic Industries Corporation (SABIC), the Dow Chemical Company, Total, Siemens, 3M, Mars, Shlumberger, Huawei and others.

At the opening of the career fair, Mark Crowell, KAUST vice president of Innovation and Economic Development, noted, "I think we truly have unique opportunities here for the University to connect the intellectual and research assets of KAUST to create new jobs and opportunities for the region. I encourage our students to take advantage of this opportunity to find a place in the growing knowledge economy."

Crowell also noted that the Seventh KICP Career Day featured for the first time representatives from KAUST startups like FalconViz, a company that conducts 3-D aerial scanning and modeling using multi-rotor copters and 3-D modeling software, recruiting for positions.

"Activities like this suggest that the University is really starting to hit its stride," he said.

Students were encouraged by supportive words from company representatives, including the Saudi Aramco representative, who stated, "Saudi Aramco is a very inclusive environment where everyone collaborates, which is similar to KAUST. We look for individuals who can fit well into this environment and continue to learn and show their passion for in their careers in research. We feel you have the skills, ambition and drive to succeed in the future." ●

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1. Visitors enjoy speaking with representatives from many international and Saudi-based companies at the University's Seventh Annual KICP Career Fair on March 17. Photo by Helmy Al Sagaff.

2. Attendees at the University's Career Fair speak with Ryan Bradley Boekeloo (far right) and Luca Passone from the KAUST startup company FalconViz. Photo by Helmy Al Sagaff.

3. Mark Crowell, KAUST vice president of Innovation and Economic Development, welcomes visitors to the Career Fair. Photo by Helmy Al Sagaff.

4. KAUST Ph.D. graduate and current employee of the Dow Chemical Company Justine Mink (left) speaks to students at the Career Fair. Photo by Helmy Al Sagaff.

My University

Dounya Barrit

Dounya Barrit is a Ph.D. student in the University's Solar & Photovoltaics Engineering Research Center (SPERC), where she is supervised by KAUST Associate Professor of Material Science and Engineering Aram Amassian. She came to KAUST from Morocco, where she was born and raised in Meknes, a city in the northern part of the country, and completed her bachelor's and master's degrees at Al Akhawayn University in Ifrane.

"I have a huge interest in renewable energy in general and solar energy in particular, and I'm currently working on optimizing and understanding the science behind perovskite solar cells," she said. "My bachelor's degree was in engineering and management science and my master's degree was in renewable energy systems, and I feel my diverse background gives me a broader view on different subjects, preparing me to always learn more."

Barrit noted her start at the University was not easy, but she feels she's now on the right track due to the support of her friends, family and her supervisor at KAUST.

"Like any student coming to a new place for the first time, I had worries when I arrived here, but I was also so excited to start the journey," she said. "I think KAUST is a special and unique place—the only place we can claim to represent the world with all its diversity. The encouragement of everyone at KAUST and the facilities here are bringing me closer to achieving my goals, and my stay here has been full of surprises and learning experiences." ●

Where do you read The Beacon?

This month's submission comes from Muhammad Wakil Shahzad, a postdoctoral fellow in the University's Water Desalination and Reuse Center (WDRC), and Mohammed Albloushi, a Ph.D. student in the WDRC. Shahzad and Albloushi visited Hawaii in mid-March for the First Pacific Rim Thermal Engineering Conference (PRTEC2016), held from March 13 to 17 on Hawaii's Big Island, the largest island in the Hawaiian archipelago.

Although Shahzad and Albloushi enjoyed attending the conference, which featured 450 presenters and 550 participants and was jointly organized by American, Korean and Japanese engineering councils, they were also excited to take some time to sightsee on the island.

"Mohammed and I visited Hawai'i Volcanoes National Park on March 15, and we explored Kilauea, one of the world's most active volcanoes—it has been continuously erupting since 1983," said Shahzad. "We had an amazing view, especially during sunset when the sun was at a specific angle and hot lava flowed into the sea through a lava tube and channel.

"The Big Island is also famous because of the weather conditions from one side of the island to the other. One side features rocks and a desert-like environment, whereas the other side is green and has rain almost every day. It's an amazing island with volcanic and naturally beautiful sites for visitors to experience." ●

Scientific minds battle it out on the cricket field

By Ahad Syed

What's the best way to get researchers out of their labs, and how can we promote more interaction between different areas of the University? The answer is easy: get people out on a cricket field!

The University's Cricket self-directed group (SDG) and the University Cricket Association, which is made of graduate students, organized a friendly cricket game between the Water Desalination and Reuse Center (WDRC) and the Solar & Photovoltaics Engineering Research Center (SPERC) on March 20.

Batting first, the WDRC team scored a mammoth 151 runs off 10 overs. Faisal Wali, WDRC center operations manager, led the way with a swashbuckling 37 runs, and Adnan Qamar WDRC system modeling specialist, provided the final touches with a six-filled 54 that boosted the score.

In response, the SPERC team scored 82 runs off their 10 overs, with SPERC research scientist Warren Duffy's 19 runs being the highest. It was a disciplined effort from the WDRC bowlers that kept the SPERC score down and ensured victory by 69 runs. Wali was named "Player of the Match" for his match-winning effort.

The match was a part of the ongoing commitment of the Cricket SDG to promote cricket in the wider KAUST community. It was great fun to see the researchers and staff members don their cricket gear and sweat it out on the field—it's amazing to see the kind of physical activity a 7 centimeter ball can make you do! The game also presented an opportunity for players to get to know each other better and even start to discuss ideas with each other outside of the office. As they say, when bright minds get together, it's an overflow of ideas and tons of enjoyment! ●

1. Cricket teams from the University's WDRC and SPERC pose together after a well-fought battle.

2. The prize cup for the cricket match on display on March 20.

3. WDRC Center Director TorOve Leiknes plays a stroke during the cricket match.

Photos by Raghu Jana and Muhannad Abu-Ghdaib.